

**WHAT IS CLAIMED IS:**

1. An image forming apparatus including developing means for developing an electrostatic latent image on an image carrier by using a two-component developing agent  
5 containing polymerized toner, said developing means comprising:

a supply/convey member in the form of a spiral screw which conveys the two-component developing agent in an axial direction while agitating the developing agent; and  
10 a toner density sensor which is placed to oppose said supply/convey member and detects a toner density of the two-component developing agent,

wherein said supply/convey member has a diameter of not less than 23 mm.

15 2. An image forming apparatus including developing means for developing an electrostatic latent image on an image carrier by using a two-component developing agent containing polymerized toner, said developing means comprising:

20 a supply/convey member in the form of a spiral screw which conveys the two-component developing agent in an axial direction while agitating the developing agent; and

a toner density sensor which is placed to oppose said supply/convey member and detects a toner density of the  
25 two-component developing agent,

wherein a relationship between an carrier average particle diameter  $R_c$  ( $\mu\text{m}$ ) of the two-component developing agent and a diameter  $R_h$  (mm) of said supply/convey member satisfies

5  $R_h \geq -0.0891 \times R_c + 26.008$

3. An image forming apparatus including developing means for developing an electrostatic latent image on an image carrier by using a two-component developing agent containing polymerized toner, said developing means  
10 comprising:

a supply/convey member in the form of a spiral screw which conveys the two-component developing agent in an axial direction while agitating the developing agent; and

a toner density sensor which is placed to oppose said  
15 supply/convey member and detects a toner density of the two-component developing agent,

wherein a relationship between a carrier average particle diameter  $R_c$  ( $\mu\text{m}$ ) of the two-component developing agent and a head diameter  $R_s$  (mm) of said toner density  
20 sensor satisfies

$$R_s \leq 0.13333 \times R_c + 1.3333$$

4. An apparatus according to claim 1, wherein when said supply/convey member has a screw pitch of 16 to 33 mm, the rotational speed of said supply/convey member is 3 to  
25 10 rps.

5. An apparatus according to claim 2, wherein when said supply/convey member has a screw pitch of 16 to 33 mm, the rotational speed of said supply/convey member is 3 to 10 rps.

5        6. An apparatus according to claim 3, wherein when said supply/convey member has a screw pitch of 16 to 33 mm, the rotational speed of said supply/convey member is 3 to 10 rps.

7. An apparatus according to claim 1, wherein said  
10 toner density sensor comprises a sensor which detects a change in permeability.

8. An apparatus according to claim 2, wherein said toner density sensor comprises a sensor which detects a change in permeability.

15        9. An apparatus according to claim 3, wherein said toner density sensor comprises a sensor which detects a change in permeability.

10. An apparatus according to claim 1, wherein a perpendicular bisector of a head surface of said toner  
20 density sensor passes through a central axis of said supply/convey member.

11. An apparatus according to claim 2, wherein a perpendicular bisector of a head surface of said toner density sensor passes through a central axis of said  
25 supply/convey member.

12. An apparatus according to claim 3, wherein a perpendicular bisector of a head surface of said toner density sensor passes through a central axis of said supply/convey member.

5 13. An apparatus according to claim 1, wherein said supply/convey member is in a non-contact state with respect to the head surface of said toner density sensor, and a gap therebetween is not more than 0.8 mm.

10 14. An apparatus according to claim 2, wherein said supply/convey member is in a non-contact state with respect to the head surface of said toner density sensor, and a gap therebetween is not more than 0.8 mm.

15 15. An apparatus according to claim 3, wherein said supply/convey member is in a non-contact state with respect to the head surface of said toner density sensor, and a gap therebetween is not more than 0.8 mm.